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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/019,125

05/10/2002

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450101-03685

9907

20999 7590 05/04/2010
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EXAMINER

WOZNIAK, JAMES S

ART UNIT

PAPER NUMBER

2626

MAIL DATE

DELIVERY MODE

05/04/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/019,125	Applicant(s) ASANO ET AL.	
	Examiner JAMES S. WOZNAK	Art Unit 2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 February 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 5-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 5-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 May 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. In response to the office action from 11/6/2009, the applicant has submitted an amendment, filed 2/3/2010, amending independent claims 1 and 8-9, while arguing to traverse the art rejection based on the amended limitations regarding characteristic value storage means and word concatenation information storage means that are utilized by the selection means in selecting first candidate words (*Amendment, Pages 10-11*). Applicant's arguments have been fully considered, but are moot with respect to the new grounds of rejection further in view of Fisher et al (U.S. Patent: 4,882,757). It is also noted that under recent guidance on 35 U.S.C. 101 claims 1, 5-7, and 9 are directed towards non-statutory subject matter. A rejection to this effect has been set forth below.

2. As claims 1 and 8-9 have been amended to delete the claim limitations directed towards new matter (*Amendment, Pages 8-9*), the examiner has withdrawn the previous 35 U.S.C. 112, first paragraph rejection.

3. Claim 9 recites an embodiment of the applicants' invention directed towards a computer readable medium recording a program. The specification provides examples of these computer readable mediums on pages 48-49 that are of a statutory type (*DVD, CD-ROM, etc*). It is noted, however, that these examples are not exclusory (*i.e., "such as", Page 48*) with respect to non-

statutory medium types. Thus, under the broadest reasonable interpretation, the full claim scope of "computer readable medium" would include non-statutory mediums such as carrier waves.

As per the recent USPTO notice signed by director David Kappos on 1/26/2010: "The United States Patent and Trademark Office (USPTO) is obliged to give claims their broadest reasonable interpretation consistent with the specification during proceedings before the USPTO. See *In re Zletz*, 893 F.2d 319 (Fed. Cir. 1989) (during patent examination the pending claims must be interpreted as broadly as their terms reasonably allow). The broadest reasonable interpretation of a claim drawn to a computer readable medium (also called machine readable medium and other such variations) typically covers forms of non-transitory tangible media and transitory propagating signals per se in view of the ordinary and customary meaning of computer readable media, particularly when the specification is silent. See MPEP 2111.01. When the broadest reasonable interpretation of a claim covers a signal per se, the claim must be rejected under 35 U.S.C. 101 as covering non-statutory subject matter. See *In re Nuijten*, 500 F.3d 1346, 1356-57 (Fed. Cir. 2007) (transitory embodiments are not directed to statutory subject matter) and Interim Examination Instructions for Evaluating Subject Matter Eligibility Under 35 U.S.C. 101, Aug. 24, 2009; p. 2."

The recommended amendment in such a case is to recite a --non-transitory computer readable medium--. "Such an amendment would typically not raise the issue of new matter, even when the specification is silent because the broadest reasonable interpretation relies on the ordinary and customary meaning that includes signals per se." In other words, this notice sets forth that a new matter rejection under 35 U.S.C. 112, first paragraph would be appropriate when the only embodiments of a computer readable medium described in the specification are of a

non-statutory or transitory type. Such an issue does not occur in the present case, as the specification clearly details mediums that would be understood to be non-transitory, and thus, statutory (*the CD-ROM and DVD examples noted above*). Thus, the examiner recommends amending claim 9 to recite a –non-transitory computer-readable medium-- in order to overcome this rejection under 35 U.S.C. 101.

Claim Rejections - 35 USC § 101

4. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5. **Claims 1, 5-7, and 9** are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Although **claim(s) 1 and associated dependent claims 5-7** appear to fall within a statutory category (*i.e., apparatus*), the full scope of claim(s) 1 and 5-7 encompass logic/software means and abstract storage structures as per the specification ("*performed by...software**", Page 48). Thus, claim(s) 1 and 5-7 are directed to non-statutory subject matter because their scope includes a computer program embodiment, an abstract data structure which does not fall within one of the four statutory categories (*i.e., it is directed to a program per se*). See also MPEP § 2106.IV.B.1.a. Data structures not claimed as embodied in computer readable media are descriptive material *per se* and are not statutory because they are not capable of causing functional change in the computer. See, e.g., *Warmerdam*, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure *per se* held nonstatutory). Such claimed data structures do not

Art Unit: 2626

define any structural and functional interrelationships between the data structure and other claimed aspects of the invention, which permit the data structure's functionality to be realized. In contrast, a claimed computer readable medium encoded with a data structure defines structural and functional interrelationships between the data structure and the computer software and hardware components which permit the data structure's functionality to be realized, and is thus statutory. Similarly, computer programs claimed as computer listings *per se*, i.e., the descriptions or expressions of the programs are not physical “things.” They are neither computer components nor statutory processes, as they are not “acts” being performed. Such claimed computer programs do not define any structural and functional interrelationships between the computer program and other claimed elements of a computer, which permit the computer program's functionality to be realized.

Claim 9 is directed to a computer readable medium recording processor executable a computer program that is not limited to a tangible, and thus, statutory medium. The scope of “computer-readable medium” as defined in the specification does not exclude signal-based mediums such as “signals used to propagate instructions”, “carrier waves/pulses” because it only provides examples of statutory medium types (“*such as*” see *Specification, Pages 48-49*). A signal does not fall within one of the four statutory categories of invention (*i.e., process, machine, manufacture, or composition of matter*) because it is an ephemeral, transient signal and thus is non-statutory. Since the scope of “computer-readable medium” includes these non-statutory instances, claim 18 is directed to non-statutory subject matter. The examiner recommends amending claim 9 to recite a –non-transitory computer-readable medium-- in order to overcome this rejection under 35 U.S.C. 101.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. **Claims 1 and 7-9** are rejected under 35 U.S.C. 103(a) as being unpatentable over Higgins et al (*U.S. Patent: 5,218,668*) in view of Doyle (*"Progressive Word Hypothesis Reduction for Very Large Vocabulary Continuous Speech Recognition," 1997*) and further in view of Fisher et al (*U.S. Patent: 4,882,757*).

With respect to **Claims 1 and 8**, Higgins discloses:

Extraction means for extracting characteristic values of said input speech, the input speech comprising a plurality of input words (*speech parameter extraction, Col. 5, Lines 45-63; and input speech corresponding to a word sequence, Col. 6, Lines 16-46*);

Selection means for selecting one or more candidate first words from the plurality of input words to be processed by speech recognition processing, based on a word score that represents an evaluation of acoustic scores and language scores calculated using said characteristic values (*determining a first word hypothesis set based on a matching algorithm utilizing a keyword template, Col. 4, Lines 49-66; Col. 6, Lines 16-46; and syntax language models, Col. 8, Lines 18-26*), and for selecting one or more candidate second words from the plurality of input words based on a second measure different from said first measure

Art Unit: 2626

(determining a second word hypothesis set based on a matching algorithm utilizing a filler template relating to keywords, Col. 4, Lines 49-66; and Col. 6, Lines 16-46);

Score calculation means for calculating said score of said candidate first and candidate second words selected by said selection means referencing concatenation information of said first and second words *(scoring a template string from a concatenation of partial strings of existing candidates located in a phrase buffer with current template candidates, Col. 6, Lines 16-46; and Col. 8, Line 9- Col. 9, Line 65); and*

Finalizing means for finalizing a words string, as the recognition result of said speech based on said score *(finalized recognition output corresponding to a string of most likely word templates, Col. 6, Lines 63-67; and finalizing phrase recognition, Col. 9, Lines 26-54)*, wherein the word concatenation information is sequentially updated based on the score *(accumulating scores for partial strings by further concatenating candidates for a current frame to the existing partial strings to produce an updated score, Col. 6, Lines 16-46).*

Higgins additionally teaches characteristic value storage means for storing characteristic values *(spectral parameter extraction and inherent storage which is required for acoustic analysis in the continuous speech recognizer, Col. 5, Line 45- Col. 6, Line 12, also the characteristic values would be required to have some type of time indexing in order so that the system in Higgins is capable of understanding a sample sequence ordering in recognizing speech); and*

Word concatenation information storage means for storing word concatenation information that is the relation of input words of a word sequence representing the results of speech recognition and includes acoustic scores, linguistic scores associated with respective

Art Unit: 2626

input words (*maintaining an accumulated distance which measures how well candidate strings match a history of input speech, wherein a match is based on an acoustic measure and a linguistic/syntax or language model measure, Col. 4, Lines 49-66 and Col. 6, Lines 1-46*); and

Using the stored information in word selection (*concatenation information is used in selected candidate words that match an input including syntax information, acoustic matching, and a iterative distance score, Col. 8, Lines 9-42*).

Although Higgins teaches the selection of alternative speech recognition candidates corresponding to smaller speech units, Higgins utilizes an acoustic distance algorithm in order to make such a selection and not a non-acoustic selection of candidate words having unstable acoustic characteristic values with a number of phonemes and syllables less than a preset value and a number of phonemes and syllables equal to or greater than the number for selection of first candidates. Doyle, however, teaches the automatic selection of candidate words having acoustically unstable constituents (*i.e., the shortness of the word contributes to acoustic matching inaccuracy because missing phonemes are more costly*) from a defined set of short words having a low number of phonemes and syllables (*i.e., the word "the" consisting of 2 phonemes and see short word list, wherein the words on the list are less than two syllables, Section 4.11, Pages 39-40*) based on an assigned boosting amount, without which the short words would not be selected or missed as candidates (*Section 4.11, Pages 37-40*). Conversely then, in Doyle, the first type candidate words would not be considered to be short words, feature more reliable recognition scores that would cause them to be likely to be picked as candidates with high recognition scores (*Section 4.11, Pages 37-39*), and have a number of phonemes and syllables greater than or equal to the number of syllables/phonemes in the short words.

Higgins and Doyle are analogous art because they are from a similar field of endeavor in speech recognition. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of Higgins with the short word selection means taught by Doyle in order to prevent short words from being lost from consideration in a speech recognition process (*Doyle, Section 4.11, Page 37*).

Higgins in view of Doyle do not specifically teach the storage of characteristic directed towards beginning, end, and terminal end time points. Fisher, however, recites that the storage of such quantities (*word beginnings and ending and utterance or terminal beginning and endings, Col. 4, Lines 52-60*) in a concatenative speech recognition system that constructs a sentence from recognized words (*Col. 3, Lines 5-20*).

Higgins, Doyle, and Fisher are analogous art because they are from a similar field of endeavor in speech recognition. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of Higgins in view of Doyle with the recorded time points taught by Fisher in order to improve overall recognition in sentence understanding (*Fisher, Col. 3, Lines 5-11*).

With respect to **Claim 7**, Higgins recites:

The selection means calculates said score using characteristic values of the speech to select said first word based on said score (*extracted speech parameters used in keyword template matching, Col. 5, Lines 45-63; and Col. 6, Lines 16-21*).

With respect to **Claim 9**, Higgins in view of Doyle teaches the speech recognition method, as applied to claim 8, but does not explicitly teach method implementation as a program stored on a computer readable medium. Fisher, however, in a similar field of endeavor in

Art Unit: 2626

speech recognition, further recites implementing a speech recognition method as a program stored on a computer readable medium to enable method implementation on general purpose computers (*Col. 13, Lines 45-68*).

8. **Claims 5-6** are rejected under 35 U.S.C. 103(a) as being unpatentable over Higgins in view of Doyle in view of Fisher et al and further in view of Holt et al (*U.S. Patent: 5,960,447*).

With respect to **Claim 5**, Higgins in view of Doyle in view of Fisher teaches the speech recognition system utilizing keyword and alternative model matching to generate candidate hypotheses in recognizing an input speech sequence, as applied to claim 1. Higgins in view of Doyle in view of Fisher does not teach the use of a storage means for memorizing speech recognition results and using the results in a subsequent alternative recognition, however Holt discloses a means for storing a confidence score from a recognition engine for use in a speech recognition process (*Col. 9, Lines 7-61*).

Higgins, Doyle, and Holt are analogous art because they are from a similar field of endeavor in speech recognition. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of Higgins in view of Doyle with the confidence score storage means taught by Holt in order to provide an improved alternative speech recognition means for editing and correcting speech recognition results (*Holt, Col. 1, Line 65- Col. 2, Line 21*).

With respect to **Claim 6**, Holt further recites:

Inputting means for providing an input for correcting the results of speech recognition; wherein said storage means stores the results of the speech recognition corrected by the input

Art Unit: 2626

from said inputting means (*editing a recognition result and updating a confidence score, Col. 9, Lines 36-61*).

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: See PTO-892.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to James S. Wozniak whose telephone number is (571) 272-7632. The examiner can normally be reached on M-Th, 7:30-5:00, F, 7:30-4, Off Alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached at (571) 272-7602. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/James S. Wozniak/
Primary Examiner, Art Unit 2626